

TABLE 1.—Time of beginning of thunderstorms in Maryland and Virginia, July 13, 1922.

MARYLAND.

Station.	County.	Time of beginning.
Northern group:		
Friendsville.....	Garrett.....	11:00 a. m.
Frostburg.....	Allegany.....	1:00 p. m.
Cumberland.....	do.....	12 noon
Clear Spring.....	Washington.....	2:30 p. m.
Chewsville.....	do.....	4:00 p. m.
Keedysville.....	do.....	4:00 p. m.
Frederick.....	Frederick.....	4:45 p. m.
Emmitsburg.....	do.....	4:45 p. m.
Westminster.....	Carroll.....	2:00 p. m.
Freeland.....	Baltimore.....	2:00 p. m.
Darlington.....	Harford.....	9:30 p. m.
Falston.....	do.....	8:00 p. m.
Aberdeen.....	do.....	7:15 p. m.
Wilmington, Del.....	New Castle.....	5: 0 p. m.
Cecilton.....	Cecil.....	5:00 p. m. (D. N. p. m. ¹)
Middle group:		
Boys.....	Montgomery.....	3:00 p. m.
Great Falls.....	do.....	4:30 p. m.
Takoma.....	do.....	1:30 p. m.
Washington.....	District of Columbia.....	4:05 p. m.
College Park.....	Prince Georges.....	5:15 p. m.
Laurel.....	do.....	D. D. p. m. ¹
Woodstock.....	Baltimore.....	2:00 p. m. (D. N. p. m. ¹)
Riderwood.....	do.....	4:00 p. m. (D. D. p. m. ¹)
Baltimore.....	do.....	2:30 p. m.
Sudlersville.....	Queen Anne.....	7:03 p. m.
Rock Hall.....	Kent.....	7:30 p. m.
Dover, Del.....	do.....	5:30 p. m.
Southern group:		
Cheltenham.....	Prince Georges.....	4:30 p. m.
La Plata.....	Charles.....	5:30 p. m.
Ferry Landing.....	Calvert.....	4:00 p. m.
Solomons.....	do.....	6:30 p. m.
Annapolis.....	Anne Arundel.....	5:20 p. m.
Ridgely.....	Caroline.....	5:00 p. m.
Seaford, Del.....	Sussex.....	6:00 p. m. (D. N. p. m. ¹)

VIRGINIA.

Northern group:		
Mount Weather.....	Clark.....	3:20 p. m.
Lincoln.....	Loudoun.....	4:00 p. m.
Arcola.....	do.....	4:00 p. m.
Washington.....	District of Columbia.....	4:05 p. m.
Quantico.....	Prince William.....	4:55 p. m.
Middle group:		
Fredericksburg.....	Spotsylvania.....	5:30 p. m.
Charlottesville.....	Albemarle.....	4:00 p. m.
Mount Moriah.....	King George.....	6:00 p. m.
Southern Group:		
Columbia.....	Fluvanna.....	12:20 p. m.
Richmond.....	Henrico.....	6:40 p. m.
Hopewell.....	Prince George.....	4:00 p. m.
Runnymede.....	Surrey.....	5:00 p. m.
Newport News.....	Isle of Wight.....	7:30 p. m.
Langley Field.....	Elizabeth City.....	9:00 p. m.
Norfolk.....	Norfolk.....	7:20 p. m.
Cape Henry.....	Princess Anne.....	7:10 p. m. (D. N. p. m. ¹)

¹ D. N.—During night; D. D.—During day. The stations are arranged according to geographic position beginning in the extreme northwest and proceeding due east, then returning to the west and proceeding east as before.

The evidence of the above table is not conclusive either for or against the idea of nonprogressive movement; it, however, seems to support the belief that thunderstorms developed east of the Blue Ridge in both Maryland and Virginia at approximately the same hour on the afternoon of the 13th and that the more vigorous of them moved east-southeast or due east. It

is also clear that there were at least two distinct series of storms in both States and that the second one was the more violent of the two. The concentration of the heavy rainfall in one or two localities must be explained as due to local and favorable conditions at those points. Very heavy rain also fell in Maryland on the 20th, due to a barometric depression central on that date on the coast.

TORNADOES IN SOUTH DAKOTA, JULY 8, 1922.

By M. E. BLYSTONE.

[Weather Bureau, Huron, S. Dak.]

In the evening of July 8, 1922, two tornadoes occurred in rather close proximity near the southern border of South Dakota, one at St. Charles, Gregory County, which borders the Missouri River on the west, and the other on the southern shore of Lake Andes, Charles Mix County, which borders the Missouri River on the east. The distance apart was about 30 miles. That these were separate and distinct tornadoes seems to be shown by the fact that no destruction occurred between the two places, and by the further fact that the one at Lake Andes is reported to have occurred at 10 p. m. and the one at St. Charles at 10:15 p. m., while both moved in a generally eastward direction.

Both these tornadoes appear to have been of great violence. The one which occurred at Lake Andes came from the west. It missed the town of that name, but it destroyed about 20 summer cottages, 2 large dance halls, and 5 large barns on the south shore of the lake. Fifteen persons were injured, but no one was killed. The property loss is estimated at approximately \$25,000. The loss to crops was slight. After causing this destruction the tornado apparently lifted and moved toward the southeast, dipping down again at a distance of about 1½ miles, but apparently causing no destruction. The debris lay toward the south, indicating that the buildings destroyed were on the northern side of the tornado. There was a funnel-shaped cloud.

The tornado at St. Charles was more destructive, possibly due to the fact that more buildings were in its path. This tornado is believed to have originated near Brooksbury, Nebr., about 15 miles southwest of St. Charles, where some barns were destroyed. However, it appears to have caused practically no destruction in South Dakota except at and near St. Charles. Practically all the buildings in St. Charles were destroyed or damaged. One grain elevator was upended and practically destroyed. Another near it was damaged only slightly. One lumber yard was destroyed and the lumber scattered. The total property loss is estimated at \$150,000. One person was killed and nine were injured. There is no report that a funnel-shaped cloud was seen, probably due to darkness, but as the path of destruction did not extend beyond the limits of the town there seems to be no doubt but that the storm was a tornado.